



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/551,739	02/16/2006	Tsuneco Maruyama	20154/0203378-US0	4286
76808	7590	05/26/2010		
Leason Ellis LLP 81 Main Street Suite 503 White Plains, NY 10601			EXAMINER PILKINGTON, JAMES	
			ART UNIT 3656	PAPER NUMBER
			MAIL DATE 05/26/2010	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/551,739

Applicant(s)

MARUYAMA ET AL.

Examiner

JAMES PILKINGTON

Art Unit

3656

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 April 2010.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
4a) Of the above claim(s) 7-9 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-6 and 10 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 29 September 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/GS/US)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Specification

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: Antecedent basis needs to be provided for the cavity density now claimed in claim 1. The specification discusses the sintered density however this is different than the cavity density.

Claim Objections

Claim 10 is objected to because of the following informalities: "completely sintered" at the end of line 8 should be deleted to be grammatically correct. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Sekimoto, JP 05071539.

Regarding claim 1, Sekimoto discloses an oil-impregnated sintered bearing comprising: a bearing body (1) made of a sintered metal to support a rotating shaft (2) by an inner surface thereof as a friction surface, said bearing body (1) having a bearing hole (central opening) therein; wherein the bearing hole includes a journal part (inner

surface of 3) that has a constant diameter, and enlarged diameter parts (inner surface of 4) that are provided on both sides of the journal part (see Figure 2) in the longitudinal direction thereof, respectively, so as to be connected with the journal part; and cavities (pores) exposed on an inner surface of the enlarged diameter part (see English abstract) having a smaller size and lower density (100-200 μm , several smaller pores have a lower density than several larger pores) than those cavities exposed on an inner surface of the journal part (sized at 20-100 μm).

Regarding claim 10, Sekimoto discloses an oil-impregnated sintered bearing which includes a bearing body (1) made of a sintered metal to support a rotating shaft (2), the bearing body (1) having a bearing hole (central opening) formed therein, the bearing hole including a journal part (inner surface of 3) of which an inner surface as a friction surface has a constant diameter and enlarged diameter parts (inner surface of 4) that are provided so as to be connected with the journal part and are formed in a tapered shape (see Figure 2) having diameters to be enlarged toward the tips thereof, wherein the bearing hole that includes the journal part (inner wall of 3) having a constant diameter is formed by pressing (how the part is formed is a product by process limitation and does not structurally distinguish the device over the prior art, see MPEP 2113) an inner circumferential surface of a cylindrical sintered body completely sintered; and the enlarged diameter parts (on 4) so as to be connected with the journal part are formed by re-pressing (the method in which the surfaces are formed are product-by-process limitations in an apparatus claim since the method of forming the surfaces does not alter the structure of the final device) the inner circumferential surface of the

cylindrical sintered body (the method in which the surfaces are formed are product-by-process limitations in an apparatus claim since the method of forming the surfaces does not alter the structure of the final device); and cavities (pores) exposed on an inner surface of the enlarged diameter part (see English abstract) having a smaller size and lower density (100-200 μm , several smaller pores have a lower density than several larger pores) than those cavities exposed on an inner surface of the journal part (sized at 20-100 μm).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 3, 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sekimoto, JP 05071539, in view of Tanaka, US PGPub 2002/0001420.

Regarding claims 2, 3 and 5, Sekimoto discloses all of the claimed subject matter as applied to claim 1 above. Sekimoto also discloses a taper angle with respect to the longitudinal direction of one enlarged diameter part which is provided on one side of the journal part, and a taper angle with respect to the longitudinal direction of the other enlarged diameter part, which is provided on the other side of the journal part are equal to each other (see Figure 2 showing same taper on both ends) [claim 2].

Sekimoto does not disclose a line obliquely extending along an inclined surface of one enlarged diameter part is arranged parallel to a line obliquely extending along an

inclined surface of the other enlarged diameter part, and a distance between the lines is substantially equal to the diameter of the rotating shaft [claim 2]; a shortest distance between a line obliquely extending along an inclined surface of one of the enlarged diameter parts and the journal part across a middle axis of the bearing body is substantially equal to the diameter of the rotating shaft [claim 3] and wherein each of the enlarged diameter parts has taper angles which change stepwise with respect to a longitudinal direction of the enlarged diameter part such that the taper angle increases with increasing distance from the journal part [claim 5].

Tanaka teaches a bearing having a journal part (32) and enlarged diameter parts (33) on each end of the journal parts wherein a line obliquely extending along an inclined surface of one enlarged diameter part is arranged parallel to a line obliquely extending along an inclined surface of the other enlarged diameter part, and a distance between the lines is substantially equal to the diameter of the rotating shaft (paragraphs 0040-0042, surfaces 33 are sized to support the shaft even when inclined); wherein a shortest distance between a line obliquely extending along an inclined surface of one of the enlarged diameter parts (33) and the journal part facing across a middle axis of the bearing body is substantially equal to the diameter of the rotation shaft (the distance between an oblique line from surface 33 to the center of the journal surface 32 on the opposite side of the bearing is substantially equal to the diameter of the rotating shaft so that the shaft can shift within the bearing, see Figures 10 and 12); and wherein each of the enlarged diameter parts has taper angles which change stepwise (first surface 33 and additional taper at the openings, see Figure 10) with respect to a longitudinal

direction of the enlarged diameter parts such that the taper angle increase with increasing distance from the journal part, for the purpose of sizing the enlarged diameters of the bearing so that they can support the shaft when the shaft is inclined relative to the axis of the bearing to increase the lifetime of the bearing (column 4 lines 37-48).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Sekimoto and provide a bearing with a journal part and enlarged diameters parts that has a line obliquely extending along an inclined surface of one enlarged diameter part is arranged parallel to a line obliquely extending along an inclined surface of the other enlarged diameter part, and a distance between the lines is substantially equal to the diameter of the rotating shaft [claim 2]; a shortest distance between a line obliquely extending along an inclined surface of one of the enlarged diameter parts and the journal part across a middle axis of the bearing body is substantially equal to the diameter of the rotating shaft [claim 3] and wherein each of the enlarged diameter parts has taper angles which change stepwise with respect to a longitudinal direction of the enlarged diameter part such that the taper angle increases with increasing distance from the journal part [claim 5], as taught by Tanaka, for the purpose of providing a bearing that can support a shaft when the shaft is inclined relative to the axis of the bearing to increase the lifetime of the bearing.

Regarding claim 6, Sekimoto in view of Tanaka discloses all of the claimed subject matter as applied above.

Sekimoto does not that the taper angles with respect to the longitudinal direction of the enlarged diameter parts are 3° or less with respect to the journal portion or adjacent enlarged diameter parts.

Since the applicant is silent to any criticality or unexpected results from having the angle set at 3 degrees or less it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the teachings of Sekimoto and provide an angle of 3 degrees or less since the device of would perform perfectly well with any acute angle, the particular angle of 3 degrees is a matter of design choice. The amount of the angle provides the predictable result of limiting of movement within the shaft and one of ordinary skill in the art would design the bearing with the appropriate angle to limit the range of movement based on the application of the bearing.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sekimoto, JP 05071539.

Sekimoto discloses all of the claimed subject matter as applied to claim 1 above.

Sekimoto does not that the taper angles with respect to the longitudinal direction of the enlarged diameter parts are 3° or less with respect to the journal portion or adjacent enlarged diameter parts.

Since the applicant is silent to any criticality or unexpected results from having the angle set at 3 degrees or less it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the teachings of Sekimoto and

provide an angle of 3 degrees or less since the device of would perform perfectly well with any acute angle, the particular angle of 3 degrees is a matter of design choice. The amount of the angle provides the predictable result of limiting of movement within the shaft and one of ordinary skill in the art would design the bearing with the appropriate angle to limit the range of movement based on the application of the bearing.

Response to Arguments

Applicant's arguments with respect to claims 1-6 and 10 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMES PILKINGTON whose telephone number is (571)272-5052. The examiner can normally be reached on Monday - Friday 7-3.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on (571)272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JAMES PILKINGTON/
Examiner, Art Unit 3656
5/19/10

/Thomas R. Hannon/

Primary Examiner, Art Unit 3656